



DUKE ENERGY COAL ASH SPILL

Duke Energy had a coal ash spill on February 2, 2014 at their Dan River Steam Station in Eden, North Carolina. Although this incident did not occur in 2013, the city wanted to inform customers about this situation. The spill resulted in an estimated maximum of 39,000 tons of coal ash being discharged into the Dan River at Eden and contained in an estimated maximum 27 million gallons of water. The discharge happened due to the failure of a 48-inch diameter metal storm drain pipe that was located underneath the primary coal ash pond. The result of this spill was that the coal ash was carried by the Dan River from Eden to Danville and onto Kerr Reservoir. The Dan River turned a light gray in color due to the spill which lasted for some time.

One of the initial concerns was the possibility of the coal ash getting into the potable water. The city's water treatment plant was able to remove the ash and the potable water met all drinking water limits and thus was safe to drink. Testing of the city's potable water for various parameters (primarily heavy metals) has been done multiple times a day for the initial three weeks and then the frequency for sampling decreased based on previous results. This testing was done by the Duke Energy laboratory and a private laboratory. Other samples were collected by the Environmental Protection Agency, the Virginia Department of Health and the city and tested for the same parameters as well as other parameters that were not tested for initially. Daily samples and then weekly samples have been collected by the city of the treated or potable water to be tested for heavy metals. All test results have shown that the potable water meets all state and federal limits for drinking water. The city has purchased some polymer to help enhance the coagulation and settling processes at the plant for the coal ash removal. Based on all analyses (over 100), the potable water was safe to drink before, during the spill and continues to be safe to drink.

The solids removed from the raw water contain the coal ash. Usually these solids are discharged to the city's wastewater treatment plant for treatment. However it was not desired to mix the coal ash solids with the biosolids from the waste treatment plant. Therefore Duke Energy was requested to remove all of the coal ash solids from the water plant and dispose of them elsewhere. This was done as requested with disposal in an approved landfill.

The city is having additional studies done to determine any short term or long term effects of the coal ash spill on water quality or treatability of the water at its existing water plant. Duke Energy will be held accountable for all short and long term impacts of the coal ash spill on water quality or treatment.



REGULATED COMPOUNDS

Contaminant & Unit of Measurement ⁽¹⁾	MCLG	MCL	Level Detected And / or Range	Violation	Date of Sample	Sources of Substance or Compound
Gross Alpha pCi/L ⁽²⁾	0	15	ND	NO	April 2008 Every 6 Yrs.	Erosion of natural deposits
Combined Radium pCi/L ⁽²⁾	0	5	0.1	NO	April 2008 Every 6 Yrs.	Erosion of natural deposits
Beta Emitters ⁽²⁾ pCi/L	0	50	1.5	NO	April 2008 Every 6 Yrs	Decay of natural and man-made deposits
Total Coliform	0	Presence of coliform bacteria in no more than 5% samples per month ⁽⁴⁾	Maximum monthly detection level 1.5% for June 2013. 1 of 66 samples	NO	Tested daily at a minimum of 50 locations per month in our service area	Naturally present in the environment
Barium ppm	2	2	0.021	NO	December 2013 Annually	Discharge of drilling waste; Discharge from metal refineries; Erosion of natural deposits
Turbidity NTU	N/A	TT = 1 NTU max TT = at least 95% of the monthly samples <0.3 NTU	Max = 0.330 Range: 0.006 – 0.330 100%	NO	Tested continuously at plant N/A	Soil runoff
Total Trihalomethanes TTHM ppb	N/A	80	Max 4 qtr. Avg. 64 Range: 27-81	NO	Tested quarterly at four locations in our service area	By-product of drinking water chlorination
Fluoride ppm	4	4	Avg. 0.71 ppm Range: 0.16-0.90	NO	Tested continuously at plant	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories; desired level 0.9
Nitrate ppm	10	10	0.36	NO	August 2012 Annually	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Lead ³ ppb	0	AL = 15	90 th % = 2 <2 –4	NO	July 2012 Every 3 Yrs.	Corrosion of household plumbing systems; erosion of natural deposits
Copper ³ ppm	1.3	AL = 1.3	90 th % = 0.139 <0.020– 0.149	NO	July 2012 Every 3 Yrs.	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Chlorine ppm	MRDLG = 4	MRDL = 4	Highest Qtrly Avg.0.85 Range:ND-2.6	NO	Tested monthly at a minimum of 50 locations in our service area	Water additive used to control microbes.
Haloacetic Acids - HAA ppb	N/A	60	Max 4 qtr. avg. 23 Range 15-34	NO	Tested quarterly at four locations in our service area	By-product of drinking water disinfection
Total Organic Carbon - TOC ppm	N/A	TT – Based on the percentage of TOC removed during the treatment process; ratio must be greater than or equal to 1.00	Lowest Running Avg. 1.07 Range: 1.00-1.48	NO	Tested monthly at raw and treated water.	Naturally present in the environment.





Notes: ⁽¹⁾ Detected Compounds - Listed are 14 parameters detected in Danville's drinking water, nine parameters during calendar year 2013. The State allows us to monitor for some compounds less than once per year because the concentrations of these compounds do not change frequently. ⁽²⁾ This data is the latest available. The SDWA requires that the highest value/lowest removal ratio detected during the calendar year be provided in this report. Not listed are the hundreds of other compounds for which we tested that were not detected. ⁽³⁾ Compliance based on 90% of samples being below action level.

Definitions & Table Key: < - Less than. **AL** - Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. **MCL** - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the Maximum Contaminant Level Goals as feasible using the best available treatment technology. **MCLG** - Maximum Contaminant Level Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. **MRDL** - Maximum Residual Disinfectant Level - the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants. **MRDLG** - Maximum Residual Disinfectant Level Goal - level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect benefits of use of disinfectants to control microbial contaminants. **NA** - Not Applicable. **ND** - Non Detect. **NTU** - Nephelometric Turbidity Unit - a measure of very small particulate matter in drinking water. **pCi/L** - Picocuries per Liter, a measure of radioactivity. **ppb** - one part per billion; the equivalent of 1 ¢ in \$10,000,000. **ppm** - one part per million, the equivalent of 1 ¢ in \$10,000. **Sources** - The major sources of the compounds detected in the finished water. **TT** - Treatment Technique - a required process intended to reduce the level of a contaminant in drinking water. **TTHM** - Total Trihalomethanes, Compounds formed during the chlorination (disinfection) of drinking water. **UCMR** - Unregulated Contaminant Monitoring Rule purpose is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. The results of our UCMR monitoring are available by contacting the waterworks representative noted elsewhere in this report. Unregulated contaminants are those for which EPA has not established drinking water standards.

City of Danville

Water Quality Report

2013



We are proud to present our 2013 Water Quality Report.

The information in this report will show, what we have always known, that our water is safe to drink and is a good quality drinking water.

Quality Control

Since 1876, our goal has been to produce a safe dependable water supply for all customers. Your drinking water is carefully guarded from the Dan River to your tap by testing to ensure its safety.

Over the years there have been five upgrades to the treatment facilities to keep pace with changing and more demanding quality limits. Technology advancements have been a part of keeping in step with changing times. Our state certified water quality lab performs 3,992 different analyses of water samples each month.



Striving For Excellence

Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) is responsible for setting national limits for hundreds of substances in drinking water and also specifies various treatment processes to remove them. We continually monitor for these substances and report results to State and Federal regulating agencies. We believe that, after reading this report, you will have a better understanding of what is necessary to bring you, our customers, safe and dependable water you can rely on.

Water Quality Report Summary

Each year, the city of Danville compiles and distributes this report to comply with one of many state and federal requirements. The purpose of this report is to provide you an overview of last year's (2013) drinking water quality. It includes details about where your water comes from and what it contains. We hope this report will provide the facts and perspective you need to make an informed evaluation of your tap water.

In this report, you will find a table showing the city of Danville had zero violations of water quality standards during the 2013 calendar year. The substances detected were all well below the levels allowed. This does not happen by chance. Your drinking water is carefully protected from its source, the Dan River, through our treatment plant, and to your tap. Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) is responsible for setting national limits for hundreds of substances in drinking water and for specifying treatment processes to remove them. State-certified water quality labs perform over 4,000 tests of water samples each month. Our treatment and distribution facilities are periodically inspected by the State.

We hold ourselves accountable to the public. Opportunities for increased understanding and involvement in water-related decision and policy making include attendance at the Danville Utility Commission Meetings, held at 4:00 p.m. on the fourth Monday of each month on the fourth floor at City Hall, and the Danville City Council Meetings held at 7:00 p.m. on the first and third Tuesday of each month at City Hall. City Council meetings are also broadcast on River City TV (Comcast cable TV channel 10). If you have questions about this Water Quality Report or want more information about your drinking water, contact the water treatment plant on Monday through Friday between 8:00 a.m. and 5:00 p.m. at 434-799-6473. To report leaks or tank over flows please call 799-5284 at any time, day or night. For customer service, please call 799-5155. If you have billing questions, please call 799-5159. Tours of our facilities are scheduled during business hours.

SOURCE WATER

Danville's drinking water comes from what is classified as a surface water source, the Dan River. The Virginia Department of Health conducted a source water assessment on the Dan River in 2002. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last five years. The report is available by contacting the Water Treatment Plant. The river was determined to be "highly susceptible" to contamination using the criteria developed by the state in its approved Source Water

Assessment Program. The sources of substances in the Dan River come from surface runoff as water travels over the surface of the land and dissolves naturally occurring minerals and substances resulting from the presence of animals and human activity. Contaminants that may be present in source water include: microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities. The presence of these substances in pretreated water does not necessarily indicate that the treated water is unsafe. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice

TREATED WATER CHARACTERISTICS	
PARAMETER	TYPICAL VALUES
pH, standard units	7.0- 8.4, avg.=7.4
Alkalinity, mg/L	12-29, avg.=23
Calcium, mg/L ⁽¹⁾	11.2
Total Hardness, mg/L	72-96, avg.=74
Sodium, mg/L	4.79
Zinc, mg/L	<0.10
Aluminum, mg/L (SMCL ⁽²⁾ =0.05-0.2)	<0.05
Iron, mg/L (SMCL ⁽²⁾ =0.3)	<0.05
Manganese, mg/L (SMCL ⁽²⁾ =0.05)	<0.01
Water temperature, °F Winter	39-73, avg. = 52
Water temperature, °F Summer	59-82, avg. = 73
Annual average daily production: 4 – 7 MGD Yearly avg.= 4.88 MGD	
(1) Varies with type of post pH adjustment used. (2) SMCL-Secondary Maximum Contaminant Level.	

The table on the following page lists only those compounds that had some level of detection. Many other compounds have been analyzed, but were not present or were below the detection limits of the lab equipment.

LEAD LEVELS

Elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Danville is responsible for providing high quality drinking water, but cannot control the variety of materials used in the plumbing components inside your home or business. You can minimize the potential for lead exposure by flushing you tap for 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

CRYPTOSPORIDIUM

Cryptosporidium are microscopic organisms that may enter surface waters from runoff containing animal wastes. If ingested, Cryptosporidium may cause diarrhea, fever and other gastrointestinal symptoms. The EPA Long Term 2 Enhanced Surface Water Treatment Rule required the city to test the raw water for Cryptosporidium, beginning February 2008, and continuing through January 2010. We are happy to report the organisms were not detected.

TRIHALOMETHANE LEVELS

The levels of total trihalomethanes (TTHMs) in some samples collected during 2013 were greater than the PMCL of 80 ppb but were not a violation of the drinking water standard. Compliance with the PMCL is based on a running annual average (4 quarters) of the quarterly samples collected and you will note the water supply did not exceed the drinking water limits on this basis. TTHMs are formed when trace amounts of naturally occurring organic compounds in the raw water source combine with chlorine that is used to disinfect the treated water. All locations do not have the same levels of TTHMs. Higher levels are expected in the areas with highest residence time (generally the furthest points in the system) and during the warmer months of the year. Some people who drink water-containing TTHMs in excess of the PMCL over many years could experience problems with their liver, kidneys or central nervous system and may have increased risk of getting cancer. This water system will continue to be monitored for TTHMs. We intend to maintain compliance with the drinking water contaminants.

about drinking water from their health care providers. EPA/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline 1-800 426-4791 or EPA web page: www.epa.gov/ow

WATER QUALITY SUMMARY

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water produced by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. We constantly monitor for various compounds in the water supply to meet all regulatory requirements.

TOTAL TRIHALOMETHANE (TTHMS) REMOVAL PROJECT

For some time now the city has been testing water samples from four sites within the distribution system for TTHMs. Compliance has been based on averaging quarterly samples from the four sites (Disinfection/Disinfection Byproducts (D/DBP) Stage 1 requirements). The city has always been in compliance with the limit for TTHMs of 80 micrograms per liter (ug/L or ppb). However the criteria has changed to require each site to meet the limit of 80 ug/L based on the averaging of the consecutive four quarterly samples from that site and not averaging all samples together (D/DBP Stage 2 requirements). Meeting the new compliance limit at all sample sites would not likely be possible as new sites were included with the revised compliance limit. Therefore the city hired Hazen and Sawyer to evaluate alternatives for reduction of the TTHMs. Hazen and Sawyer recommended mixing and aeration in the Ballou Park 8 million gallon storage tank as the best alternative for removing the TTHMs. Design has been completed and construction should start in late summer and be completed by December 31, 2014.

Due to the time requirements of this project, the city asked the Virginia Department of Health for a two year extension to meet the new requirements. The Virginia Department of Health granted the time extension and gave an exemption for the compliance determination to be done as specified in the Stage 1 rules. These testing results as well as other testing results will be reported to the city customers.

We have been granted an extension to the new tighter requirements for TTHM/ Haloacetic Acids (HAA5) compliance. We were unable to meet the October 2013 regulatory deadline because we need to construct mixing and aeration treatment in the city's 8 million gallon reservoir at Ballou Park and may also include additional modifications such as aeration in select distribution system storage tanks. We plan to complete this work by September 30, 2015. Until then, we will be implementing both temporary and permanent operational changes during the interim period to provide the water with the lowest TTHM levels possible. The HAA5 concentrations have always been below the required level in the city water and no problems are anticipated with the new compliance criteria. The new compliance criteria for HAA5 is the same as for the TTHM.

WHERE DOES IT COME FROM. WHERE DOES IT GO?

Steps of Water Treatment



1 COAGULATION: Alum and other chemicals are added to water to form tiny sticky particles called "floc" which attract the dirt particles.

2 FLOCCULATION: Slow mixing to allow Floc to get larger so it will settle quicker.

3 SEDIMENTATION: The heavy particles (floc) settle to the bottom and clear water moves to filtration.

4 FILTRATION: The water passes through filters that help to remove even smaller particles.

5 DISINFECTION: A small amount of chloring is added to kill any bacteria or microorganisms that may be in the water.

6 STORAGE: Water is pumped in a closed tank or reservoir where it flows through pipes to homes and businesses in the community.

Frequently Asked Questions

Why does the water sometimes look rusty? Rusting galvanized pipe in plumbing systems is the typical cause of discolored water. Iron causes the discoloration; it is not a health risk. If the cold water is discolored, it will clear after flushing lines some. If the hot water is rusty, the water heater may need flushing. If you flush it, we recommend that you follow the manufacturer's directions. We feed a corrosion inhibitor and adjust the pH to help prevent this problem from occurring in both our system and yours.

Does Danville add fluoride to the water? We do add fluoride to the water. There is a small amount that is naturally occurring in the Dan River. We boost the level to obtain the desired amount of 0.70 ppm to help prevent tooth decay.

Is Danville's water considered soft or hard? Danville's water is considered soft for this area. Our water averages around 74 mg/L total hardness as CaCO3.

What can I do about chlorine odors? Chlorine odors may be more noticeable during the summer. Chlorine kills organisms that may cause disease. Listed below are ways to remove chlorine from tap water. If you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

- Fill a pitcher and let it stand in the refrigerator overnight. (This is the best way.)
- Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
- Pour water between containers about ten times.
- Heat the water to about 100 degrees Fahrenheit.

The entire staff of the Danville Water Treatment Plant and the Water & Gas Distribution crews take great pride to ensure that YOUR water is safe and pleasurable every time you turn on a faucet or take a sip from a water fountain.